DENVER WATER

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**PROFESSIONAL SERVICES**
**REQUEST FOR PROPOSALS**

**North System Renewal Water Treatment Plant (NSRWTP)**
**Design Package #3 (DP#3) – Electrical, Instrumentation & Control Systems**

## Section 1: Background and History

Denver Water (DW) is in the process of replacing the aging Moffat Water Treatment Plant (WTP) with a new, modern plant located near Ralston Reservoir. The site is owned by DW and has approximately 80 acres available for the NSRWTP. The new facility will have the capacity to initially treat from 10 to 150 million gallons per day (MGD) and be expandable to treat up to 250 MGD, with accommodations for future unit processes such as ozonation, ultraviolet (UV) disinfection, and granular activated carbon (GAC) adsorption. Facility accommodations will also maintain available land for a parallel treatment system should a more impaired water source be treated at this site in the future.

## Section 2: Project Description

DW is soliciting proposals for a **DP#3 – Electrical, Instrumentation & Control Systems** design consultant (Consultant) to execute and deliver electrical supply and distribution, instrumentation and controls, security, and communications preliminary design phase services for the NSRWTP. The NSRWTP is a new 150-MGD facility located on DW property near Ralston Reservoir north of Golden on Colorado State Highway 93.

The project execution will be a joint effort between DW, DW's Owner's Representative (OR), a Construction Manager-at-Risk (CMAR), and the design team. The design team will be comprised of a multi-disciplinary team based on the design packages (DPs) for the NSRWTP.

- DP#1 – Site and Civil Improvements
- DP#2 – Treatment Process Systems and Structures
- DP#3 – Electrical, Instrumentation & Control Systems
- DP#4 – Ancillary Treatment Process Systems and Structures
- DP#5 – Architectural and Building Systems
- DP#6 – Post-Tensioned Water Storage Tanks

DW/OR responsibilities will include project management, internal and external communications, scheduling of internal resources, design management, review, and budget allocation. The Consultant's responsibilities and pertinent project information are presented herein with instructions for preparing a complete proposal to serve as the Electrical, Instrumentation & Control Systems Consultant for the delivery of the NSRWTP.

The Project will be completed using a step-wise phasing strategy to make decisions and obtain approvals before proceeding to subsequent phases. DW is open to input on how to accomplish this phased implementation with the understanding that DW may choose to accelerate or slow down phases in order to satisfy operational or budgetary constraints. DW reserves the right to terminate or amend a DP contract following completion of 20% design, or at any time through construction completion.

## Section 3: Project Objectives

The following specific project objectives have been identified:

- Sustainability: The NSRWTP site and facility will be designed to achieve the highest level of sustainability ratings possible in a cost-effective and feasible manner.
- Modularity: The NSRWTP processes will be designed for parallel operation to allow for units to be removed from service (operational and electrical) while the plant remains functional.
- Ease of Access and Maintenance: The NSRWTP site will be designed to allow for safe, efficient flow of traffic; future upgrade, expansion and improvement to processes and structures; and ease of maintenance of all equipment.
- Safety: The NSRWTP will be designed to facilitate personnel safety during construction, startup and commissioning, and long-term plant operations and maintenance (O&M).
- Personnel: The NSRWTP will be designed to accommodate existing and future Source of Supply (SOS) facilities, allowing for streamlined operation and control.
- Schedule: The NSRWTP will be operational no later than 2023.
- Budget: The NSRWTP team will accomplish the project objectives within the projected budget.

## Section 4: Consultant Scope of Services

The DP#3 Consultant shall be responsible for the 0-20% design and concept alternatives development of the following:

- Improvements necessary to provide electrical power including coordination with XCEL Energy to obtain power supply, on-site looped power distribution system, standby power supply, motor control centers, variable frequency drives, power distribution load centers, lighting and power panels.
- The Consultant shall apply for and obtain all permits required for work associated with DP#3. All local, state, and federal required permits obtained shall be coordinated with the OR for permit tracking.
- The instrumentation design shall include all field instrumentation, communication network, Programmable Logic Controllers (PLCs) and control logic to allow continuous automatic and remote operation of all water treatment system components at the design capacity.
- The Consultant shall use the process and piping plan developed by the DP#2 design consultant to prepare complete process and instrumentation drawings (P&IDs) for the primary treatment process and all the ancillary unit processes developed by DP#4.
- DP#3 Consultant shall design the on-site security system with camera monitoring and controlled and monitored access for all buildings, as well as security access control.
- The DP#3 Consultant shall provide design information associated with electrical, instrumentation and controls systems to the to the DP#1-2 and DPs#4-6 design consultants for these disciplines selected by DW to produce a comprehensive set of construction plans and specifications.

- Develop a NSRWTP project specific Electrical, Instrumentation & Controls Design Guidance Document (DGD) to establish design standards for the final design. The DGD will summarize project applicable standards based on the level of service, quality, and redundancy established for the project. DW intends to use a five-day Lean Event with the Consultant to help develop and workshop the DGD. The Event shall also establish design specifics including, but not limited to, local control for different types of equipment (manual hard wire or PLC), cable tray or conduit, and diagnostic capabilities.
- Consultant will assist in preparation of site information, drawings, and analysis in preparation for a DW-hosted Lean 2P event with DW and the balance of the design team to determine the final site layout of the NSRWTP. Consultant will help in the preparation, participation and follow-up of the Lean 2P event. Consultant will identify Lean Facilitator for involvement in future Phases of Work.
- Consultant will identify a Specifications Coordinator to be a part of the NSRWTP Specifications Team (led by DW and the OR) to oversee the development of project specific specifications for DP#3 in conjunction with the development of a NSRWTP project specific Capital Project Construction Standards manual and supplementary technical specifications.
- Consultant will identify an AutoCAD Lead Coordinator to be a part of the NSRWTP Standards Team, and to be responsible for the versioning and control of AutoCAD files and security/permission access to common AutoCAD reference files used by all DPs.
- Consultant will identify a Startup and Commissioning Lead Coordinator to initiate planning and lead other DP consultants throughout all phases of work. The DP#3 Consultant will serve as the Startup and Commissioning lead throughout planning and execution of all startup and commissioning activities.
- Consultant will identify a Lead Electrical Design Engineer and a Lead Instrumentation and Control Systems Design Engineer for the electrical design of NSRWTP.

## Section 5: Consultant Qualifications

The Consultant shall demonstrate that the firm and proposed team have the necessary experience to design the NSRWTP to meet DW's project objectives and all regulatory requirements. At a minimum, the Consultant shall meet the following minimum criteria:

- The Consultant shall have been the prime or subconsultant for the design of the electrical, instrumentation and control systems for a minimum of three (3) complete Water or Wastewater Treatment Plants (W/WWTP) with a capacity greater than 50 MGD within the last 10 years, with one of the W/WWTPs having a minimum capacity of 100 MGD. The experience may include greenfield plants or expansion of existing facilities with new treatment trains meeting the minimum capacity criteria. Rerating of processes to achieve an increase of 50 MGD capacity does not qualify.
- The Consultant shall have experience designing electrical, instrumentation and control systems for conventional W/WWTPs, hydroelectric facilities, UV disinfection, ozonation, and pumping systems with medium voltage (4,160 to 25,000 volts) and low voltage (480 volt) power distribution systems. The qualifying experience for each unit process can be at different treatment plants.
- The Consultant shall have experience in designing distributed industrial control systems with multiple PLC's that include traditional hardwired Input Output (IO) solution and at least 2 different IO bus technology solutions.

- The Consultant shall have experience designing electrical power distribution systems with redundant power supplies, whether it be multiple utility power sources, standby diesel generators, cogenerators, hydroelectric, or a combination thereof. Consultant shall have experience with designing automated power distribution control systems to accomplish closed transition switching and parallel operation with the utility of all the available alternate power sources.
- The Consultant shall have experience in designing protective relay systems and selective device coordination to minimize equipment damage and isolate power outages to small areas. Consultant shall have experience in designing electrical power distribution systems to minimize the dangers of arc flash.
- The Consultant shall have a comprehensive health and safety program to minimize work-related injuries.
- Consultant shall have a robust quality assurance/quality control program to verify deliverables have been reviewed and checked. Consultant shall be familiar with DW's Capital Projects Construction Standards (CPCS), Capital Projects Procedures Manual (CPPM), and Engineering Standards.
- The Consultant's Project Manager shall have experience managing the design of two (2) multi-discipline water treatment projects with a minimum construction cost of $50 million within the last 10 years.
- The Consultant's Lead Electrical Engineer shall have been in responsible charge for the electrical design of three (3) W/WWTP projects with a minimum capacity of 25 MGD within the last 10 years, with at least one (1) of the W/WWTP projects having a capacity of 50 MGD.
- The Consultant's Lead Instrumentation and Control Systems Engineer shall have been in responsible charge for the instrumentation and controls design of three fully automatic, W/WWTP projects with a minimum capacity of 25 MGD within the last 10 years, with at least one (1) of the W/WWTP projects having used AutoCAD Plant3D for the development of intelligent P&IDs.
- The Consultant's AutoCAD Lead Coordinator shall have been responsible for CAD coordination for three (3) W/WWTP 3D projects within the last 10 years with a minimum capacity of 25 MGD, and have demonstrated experience successfully using Plant3D, Civil3D, Electric, and ProjectWise (or similar document control system) on past projects.
- The Consultant's Specifications Coordinator shall have been responsible for developing, compiling, and cross-referencing specification coordination using Construction Specifications Institute (CSI) MasterFormat 2004 edition (or later), having completed specification for a minimum of three (3) multi-discipline projects within the last 10 years.
- The Consultant's Startup and Commissioning Lead Coordinator shall have planned, led, and been responsible for startup and commissioning of three (3) W/WWTPs with a minimum capacity of 25 MGD within the last 10 years, with one (1) W/WWTP having a capacity of 50 MGD or greater.

## Section 6: Owner Responsibility

DW will provide to the Consultant all available relevant information to aid in the design process. This includes but is not limited to:

- Previous studies.
- Project Objectives.
- Provide review comments within agreed upon schedules.
- Provide all surveys including design surveys and as-built elevations.
- Provide historical as-built records.
- Provide relevant and appropriate design, specifications, and drafting for DW-designed project components including but not limited to: Ralston Outlet Works and Conduit 16.

## Section 7: Project Assumptions

The following assumptions were made in the development of this Scope of Services:

- The Preliminary Design Phase will proceed to 20%. The 20% level will be a major design gate for the project and will meet the requirements detailed in the Scope of Services. Initially, the Consultant's Scope of Services will only be defined through the 20% Preliminary Design Phase. The Scope of Services from 20% to Final Design and Bidding may be developed near the conclusion of the 20% design.
- The design phase, through 20%, will not exceed a period of seven months from Notice to Proceed unless so authorized in advance of the delivery deadline by DW.
- DW will provide payment for all agreed upon permit application and review fees.
- Public relations efforts up to 20% design will be completed by DW.
- The project execution shall follow the NSRWTP Project Management Plan, a copy of which will be provided to the selected Consultant, and applicable portions of DW's CPPM: http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/.
- Drawings shall be provided in electronic media on the shared NSRWTP ProjectWise site and in quality hard copy media. AutoCAD Drawings shall be in accordance with DW's design drafting CAD Standards: http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CADStandards/ and shall include, but not be limited to, the Standards located online in DW's CPPM.
- Attend a meeting with DW's Drafting and Administration groups to discuss DW's Standards.
- Project specifications shall be submitted in CSI MasterFormat 2016 edition and adhere to DW's Engineering Specifications, with formatting consistent with the CPCS: http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CPCS/ and any revisions made by the NSRWTP Specifications Team.
- Construction Contract General Conditions, Contract Agreement, Bid Forms, etc., shall be provided by DW via the CPCS.

- A “gate” is a term used to reference a formal document and the process used to acknowledge project decisions. Gates are designed to acknowledge project decisions. Gates are designed to acknowledge approval of its related topic by project stakeholders. A gate also is a means to document decisions that have been made which are critical to the progress of the design beyond the current milestone/phase. Once a gate is “closed”, no changes can be made to the design deliverable or data transferred without approval from DW. If changes are identified, those changes are to be logged on the project change log and addressed in accordance with the change management process identified in the NSRWTP Project Management Plan and the CPPM.
- The Consultant shall assume the site is free of any sensitive cultural resources that require environmental clearance or other required permitting at the local, state, or Federal level.
- The DP#2 consultant will submit the project to Colorado Department of Public Health and Environment (CDPHE) for design approval. The DP#3 Consultant shall coordinate and provide plans and information to the DP#2 consultant as needed to facilitate design submittal and approval.

## Section 8: Project Schedule

DW may elect to follow the proposals with a formal questionnaire and/or interview to assist with the proposal evaluation. Final selection of a Consultant will be based upon the selection criteria detailed in Section 12.

The anticipated Project Schedule is summarized below:

- May 17, 2016 Request for Proposals advertised through www.denverwater.org
- May 26, 2016 Mandatory Pre-Proposal Meeting
- June 8, 2016 Final Written Questions Due
- June 16, 2016 Proposals Due
- July 11-13, 2016 Consultant Interviews
- July 14, 2016 Announce Consultant Selection
- August 10, 2016 Selected Consultant Recommendation to the Board
- August 11, 2016 Notice to Proceed Issued to Selected Consultant
- February 28, 2017 Preliminary Design (20%) Completion
- March, 2019 Final Design Completion (estimated)
- 2023 Construction Complete (estimated)

Any requests for clarification or additional information regarding submission of this RFP shall be submitted in writing via e-mail (peter.mccormick@denverwater.org), or during the Pre-Proposal meeting that will be held in the Denver Police Protective Association (PPA) Event Center at 2105 Decatur Street, Denver, Colorado 80211 on Thursday, May 26, 2016 at 8:30 am, local time. . Limit attendance at the Pre-Proposal Meeting to three employees per firm. Written requests for interpretation, clarification, and/or additional information must be received no later than 5:00 pm, local time, Wednesday, June 8, 2016. DW is in the process of determining selection committee members for all NSRWTP RFPs, and has instituted a blackout period for the solicitation of design services. Any contact with DW or OR team members regarding the NSRWTP during the RFP period, except Peter McCormick, may result in consultant disqualification.

## Section 9: Scope of Services

The following Phase breakdown describes Phases 1 through 6 and primary responsibilities of the Consultant for DP#3 of the NSRWTP Project. The scope of work for this proposal is limited to Phase 1 and 2; a future proposal may be requested for Phases 3 through 6.

**Phase 1 Project Management and Administration:** Project Management and Administration involves tasks to create the elements necessary for the Consultant to execute the Project and effectively collaborate within the Project team, in accordance with the NSRWTP Project Management Plan.

**Phase 2 Preliminary Design:** Preliminary Design includes conceptual planning and design development for the Project to a 20% level.

**Phase 3 Final Design:** Final Design includes design development for the Project through 30%/60%/90% design milestones and delivery of the Final for Construction documents. Final design includes bid phase services, preparation of addenda as necessary, and preparation of conformed documents.

**Phase 4 Construction:** Engineering services during construction include submittal review, Request for Information (RFI), change management, communication, observation and inspections.

**Phase 5 Commissioning:** During the course of the Project and through the completion of construction, Consultant will participate in project startup, testing, and commissioning planning and execution for successful transfer of the project to DW O&M.

**Phase 6 Project Closeout:** The Consultant will transfer project files to DW, complete filing of project documents, prepare Record Drawings, final deliverables, warranty and project close-out.

### *Phase 1 – Project Management and Administration*

Project Management and Administration includes the following activities:

- General Project Management.
- Project Work Plan development for incorporation in the NSRWTP Project Management Plan.
- Project invoicing and reporting.
- Project workshops.
- Project meetings.
- Project gate review meetings (20%).
- Project Management review meetings.

#### Task 1.1: General Project Management

Time for this task is allocated to the Consultant Project Manager to oversee and administer the project. For the purposes of estimating, the Consultant shall assume the OR will provide Project-level oversight and management, with the Consultant providing DP-specific oversight.

*Deliverables:*

*The following deliverables will be provided as part of Task 1.1.*

- *Cost Loaded Schedule/Work Breakdown Structure time allocation provided to OR for incorporation in master NSRWTP Cost-Loaded Schedule.*

**Task 1.2: Project Work Plan**

The Project Work Plan will document the key project information required by all Consultant Team members to assist them in executing the project to meet the required objectives on-time and on-budget, and meeting DW's critical success factors and quality requirements. The key elements of the project work plan are described below, and will be incorporated into the NSRWTP Project Management Plan for all Project Team members:

- Consultant Project Team members, their roles, and responsibilities. This will also include the staffing plan (management, engineering, quality control, etc.)
- Scope of Services with Work Breakdown Structure.
- Baseline Planned Value (PV) schedule to be used for Earned Value (EV) reporting.
- Consultant Project safety plan.
- Consultant Quality Assurance/Quality Control plan. DW and the OR will be responsible for cross-package coordination, quality assurance, and quality control. The Consultant is expected to provide its plan for internal DP quality assurance and control.

In addition to producing the Project Work Plan, the Consultant will provide input to the following components of the master NSRWTP Project Management Plan components:

- Project budgets.
- Communications Plan.
- Risk management plan, including risk register.
- Project cost-loaded schedule in GANTT chart format. Schedule updates will be provided in monthly progress reports, if changes have been made and agreed upon by DW. Project Schedule input shall be provided in Primavera P6 for ease of incorporation into the master NSRWTP Project Schedule.

*Deliverables:*

*The following deliverables will be provided as part of Task 1.2.*

- *Consultant Project Work Plan and input to master Project Management Plan.*

**Task 1.3: Project Invoicing and Reporting**

Monthly invoices will be prepared and submitted to DW and the OR in an approved format. Invoices shall include the following broken down by task, Prime Consultant, and Subconsultants:

- Total contract amount.
- Detailed charges for the current invoice period.
- Total charges to date.
- Previous billings.
- Outstanding balance.
- Current amount remaining.
- Total amount due.

Consultant shall be responsible for management of the Consultant and Subconsultant Project Team's overall cost, schedule, and quality, actively coordinating with DW and the OR to manage:

- Project Costs.
- Project Schedule.
- Document Control.

Monthly project status reports shall be prepared and submitted to DW and the OR, along with the monthly invoices. These reports will include:

- Summary of services completed since the previous report.
- Any cost or schedule variance from the approved Project Schedule and budget, including separate earned value graphs for the Consultant and each Subconsultant.
- Any updates to the master Project Issues and Potential Change logs.
- Milestones and/or deliverables scheduled in the coming month.

This task also includes periodic project review by Consultant management to assure that the project is meeting DW's critical success factors, is on schedule, and within budget.

*Deliverables:*

*The following deliverables will be provided as part of Task 1.3.*

- *Monthly invoices.*
- *Monthly Project Status Reports.*
- *Monthly input/updates the Project Cost-Loaded Schedule.*

**Task 1.4: Project Workshops**

Workshops are to inform and obtain input from Project Team stakeholders. DW and the OR will prepare agendas and minutes for all workshops, which include:

- Kickoff workshop for DPs #1, 2 and 3 – assume four Consultant team members for two hours.
- Kickoff workshop for DPs #4 through 6 – assume four Consultant team members for two hours.
- Stakeholder workshops for key decisions – assume four one-hour workshops with two Consultant team members.
- Lean Workshop for DGD development – assume attendance of four Consultant team members for a single five-day workshop, facilitated by others.
- Lean workshop for Site Layout finalization – assume attendance of two Consultant team members at a single five-day workshop, facilitated by others.

*Deliverables:*

*The following deliverables will be provided as part of Task 1.4.*

- *Input to master NSRWTP Decision Log & Action Item Log.*
- *Notes and action items from each workshop for inclusion in Minutes, prepared by DW/OR.*

**Task 1.5: Project Meetings**

Project meetings include the key Project Team members from each DP and, as needed for the current topic, project stakeholders. Assume up to three attendees at each meeting, as applicable to the meeting topic.

- Discuss ongoing issues and conflict resolution.
- Three CAD Standards meetings.
- Three Specifications Standards meetings.
- Three co-location planning meetings.
- Bi-weekly DW, OR, and DP Consultant Management review meetings.
- Bi-weekly DW, OR, and DP Consultant Team meetings.
- Four half-day partnering sessions to discuss NSRWTP progress to date and provide coordination between DPs.

*Deliverables:*

*The following deliverables shall be provided as part of Task 1.5.*

- *Input to agendas, minutes, and decision logs prepared by DW/OR.*

**Task 1.6: Project Management Review Meetings**

Quarterly management review meetings shall be held with Consultant and DW's/OR's Project Management Team (upper echelon of Project Management for the project) in attendance. The meeting will be attended by up to two members of the Consultant Team. A total of three hours per attendee is assumed for the workshop, with an additional one hour of project management time for input to agenda and minutes development.

*Deliverables:*

*The following deliverables shall be provided as part of Task 1.6.*

- *Input to agendas, minutes, and decision logs prepared by DW/OR.*

***Phase 2 – Preliminary Design Phase Services***

Preliminary Design Phase Services include the following activities:

- Advance the elements to the preliminary design 20% milestone.
- Develop planning documents, conceptual site layouts, and preliminary design drawings including drawing index identifying the Consultant's anticipated list of drawings. Drawing index shall identify and distinguish those drawings developed and prepared during preliminary design and those to be completed during final design.
- Prepare a list of proposed technical specifications in CSI MasterFormat 2016 edition.
- Complete the specific Tasks associated with Preliminary Design and coordinate and interface with the design team concurrently advancing their respective elements of the project.

**Task 2.1: Data Review and Evaluation**

The Consultant shall familiarize themselves with the North System source and supply and available utilities through a review of provided reference information, site field investigations, and DW's CPCS. Identify site power alternatives, associated cost, permitting, and timelines for incorporation in the NSRWTP Project Management Plan. Provide evaluation of site power and communications distribution systems and electric and telephone utility interface. Consultant shall evaluate and make recommendations for business Ethernet communications, network distribution closets for switches and cabling for wired and wireless networking, provisions for datacenter/server room with room for at least 2 full size servers cabinets, the demark for all CenturyLink communications and telephone service as may be required. Summarize requirements of all applicable Codes, Utilities Standards, Jefferson County, local Fire Department and all other Authorities Having Jurisdiction. Describe in detail the specific requirements imposed by these entities and how they affect the overall design and cost.

*Deliverables:*

*The following deliverables shall be provided as part of Task 2.1.*

- *Updates to permit log and schedule for coordination with electrical and telephone utilities.*
- *Memorandum documenting evaluation and recommendations for site power, network and communications distribution systems, including regulations and codes.*

**Task 2.2: Design Criteria**

Consultant shall review DW's preliminary design criteria documentation and update for all electrical and instrumentation components.

- Consultant shall evaluate alternatives and make recommendations to DW.
- Consultant shall develop recommendations for amendments to existing design criteria for all equipment types for electrical, instrumentation, controls, SCADA, security, communications, and building lighting.

*Deliverables:*

*The following deliverables shall be provided as part of Task 2.1.*

- *Alternatives analysis evaluation memoranda.*
- *Design criteria.*
- *Preliminary P&IDs.*

**Task 2.3: Site Layout and Sustainability Evaluation**

Consultant shall review DW conceptual layout and coordinate with DP#1 and DP#2 consultants in their preparation of a refined preliminary layout. Consultant shall prepare an evaluation of electrical loads, provide recommendations for primary and backup power supplies, and prepare alternatives analysis for sustainability certifications.

- Evaluate and perform a preliminary facility load study with anticipated equipment. Make provisions in the sizing and configuration of the Electrical Service Equipment for DW's initial flow of 10- to 150-MGD and for future expansion to 250-MGD.

- Provides recommendations for primary and backup power supply for treatment processes and buildings.
- Evaluate the alternatives for sustainability design components and Energy Star products in support of potential Leadership in Energy and Environmental Design (LEED) and/or Envision™ certifications, including cost-benefit analysis for the following options at a minimum: purchasing Energy Star and Federal Energy Management Program (FEMP)-designated products; lighting design supporting a 30% reduction in heat loads assumed in ASHRAE standards; achieving silver, gold, or platinum LEED certification; reducing energy usage to meet DW system-wide goals; using renewable energy to meet DW system-wide goals; obtaining net-zero energy usage at the NSRWTP.

*Deliverables:*

*The following deliverables shall be provided as part of Task 2.3.*

- *Provide input to site layout analysis performed by DP#1, in collaboration withDP#2 and DPs#4-6.*
- *Provide energy-related components input to DP#2-developed sustainability certification evaluation memorandum including cost-benefit analysis and schedule impacts.*
- *Provide input to DP#2 Net-Zero evaluation memorandum.*
- *Provide 20% Electrical, Instrumentation and Control Systems features in 3D format for incorporation in DP#1 and DP#2 site model.*
- *Provide list of technical specifications.*

**Task 2.4: Design Guidance Document (DGD)**

Consultant shall prepare a Project specific DGD.

- Consultant shall review DW's CPCS for applicable standards to incorporate into the DGD. Consultant shall assist in preparation for and participate in a Lean event hosted by DW to develop and finalize the Electrical and Instrumentation DGD, and prepare documents identified during the Lean event. Any gaps identified will be evaluated by Consultant with recommendations for possible inclusion in the NSRWTP CPCS.
- Consultant shall prepare a safety guidance document for prevention through design.

*Deliverables:*

*The following deliverables shall be provided as part of Task 2.4.*

- *Electrical, Instrumentation & Control Systems DGD.*
- *List of proposed supplemental technical specifications.*
- *List of proposed supplemental standard details.*

***Task 2.5 – Basis of Design Memorandum***

Consultant shall prepare one or more Basis of Design Memorandum(s) for the electrical, instrumentation, communications and security systems, which document alternatives analysis and technical decisions, and makes recommendations for streamlined design. The Basis of Design Memorandum(s) shall address codes, standards, safety, design constraints, alternatives, loading criteria, redundancy, materials of construction, and assumptions. The Memorandum shall also contain the following elements:

- Keyed location overall site power and communications distribution plan. Plan shall utilize the 3D base map developed by DP#1 and determine potential interference locations and means to avoid interference. Site plan shall show all major electrical equipment and electrical ductbanks with approximate size of electrical ductbanks.
- Electrical one-line diagrams.
- Communications/fiber optic diagram.
- Ground system evaluation and enhancements.
- Electrical Room Equipment layouts.
- Electrical load study for normal and standby power.
- Preliminary Electrical Systems Analysis (ESA), including submission of electronic .dez file, of all facilities and complete site (in ESA EasyPower 9.7.1.204 or later version).
- Utility contact information.
- Available electric utility fault current.
- Process and instrumentation diagrams (P&IDs), and process narratives.
- SCADA system architecture diagram.
- LCP layouts, field/equipment interface, control schematics and PLC I/O.
- Environmental Control Panel layouts and control schematics in progress.
- Provide the Electric and Communication Application for (Electric and Communication) Service forms completely filled out.

*Deliverables:*

*The following deliverables shall be provided as part of Task 2.5.*

- *Basis of Design Memorandum(s) documenting all elements of the NSRWTP Electrical, Instrumentation & Control Systems.*

***Phases 3-6***

Scope of work, deliverables and schedule for Phase 3 and subsequent phases will be negotiated with Consultant and DW based on performance of Phase 1 and 2, and an increased project design definition developed in Phase 2.

## Section 10: Proposal Requirements

The proposal shall outline the Consultant's scope of services, which at a minimum must include the criteria set forth within this Request for Proposal, and the Consultant's approach to administer and complete the project. A detailed project approach will assist DW in understanding the Consultant's comprehension of the project and the opportunities and constraints that a project of this complexity may contain.

Proposals shall be limited to 20 pages (double-sided counted as 2 pages) not including resumes. At a minimum, the Proposal shall include:

- Cover Letter (two pages maximum).
- Qualification documents as requested under *Qualifications* (four pages maximum).
- Written statement regarding the consultant's eligibility to perform the work without a conflict of interest (one page maximum).

- Project approach including any unique solutions and clearly identifying all assumptions including any additional scope proposed as add-on tasks.
    - Provide detailed lessons learned from past programs. Include lessons learned on workflow with multi-firm programs.
    - Provide lessons learned regarding use of DW's intended CAD/3D modeling platforms. Should the Consultant recommend a different CAD approach, provide detailed explanation of cost savings and/or other benefits to DW.
- Detailed schedule with any deviations from the schedule included herein clearly identified and tied to the project approach (an 11-inch by 17-inch format for the schedule is acceptable).
- Provide an organization chart showing the team structure and their duties (an 11-inch by 17-inch format for the organization chart is acceptable).
- Tailored 2-page resumes (not included in page limit) for key project personnel, including projects similar in nature and complexity to the NSRWTP Project. In addition to the Consultant's key project personnel, NSRWTP project specific roles are detailed below.
    - **Lead Electrical Engineer –** Responsible for electrical power, conduit and wiring design, and smart MCCs and VFDs design.
    - **Lead Instrumentation and Control Systems Engineer –** Responsible for design field instrumentation, development of P&IDs and SCADA system architecture.
    - **Startup and Commissioning Lead Coordinator –** Responsible for coordination of startup and commissioning planning, working in collaboration with other DP consultants and DW O&M. Startup and Commissioning planning efforts will be led by DP#3.
    - **Specifications Coordinator –** Responsible for the development and coordination of project specifications, the Specifications Coordinator will be a member of the NSRWTP Project Specifications Team, which will be comprised of staff from each DP and led by DW/OR.
    - **AutoCAD Lead Coordinator –** Responsible for the versioning and control of AutoCAD files and security/permission access to common AutoCAD reference files. The NSRWTP Project DP Consultants will employ AutoCAD Civil3D, Plant3D, Electrical, Revit, and Revit MEP (Mechanical, Electrical, and Plumbing), along with ProjectWise for document management.

  The Consultant understands that DW's selection process incorporates an evaluation of key personnel, and that DW's decision to select the DP#3 Consultant is based upon the representation of the Consultant's intent to use the key personnel for the duration of the Project. Therefore, the Consultant will agree to retain the listed **Project Manager, Startup and Commissioning Lead Coordinator**, the **Lead Electrical Engineer**, and **Lead Instrumentation and Control Systems Engineer** through the Project 100% design completion. Any replacement for key individuals must be approved in advance and agreed to in writing by DW. A change in **Project Manager, Startup and Commissioning Lead**, **Lead Electrical Engineer**, or **Lead Instrumentation and Control Systems Engineer** without pre-approval in writing may result in DW terminating the Consultant's contract for convenience, require the Consultant to pay DW a one-time amount of $100,000.00 (to be withheld from progress payment), and/or allow DW to select the key individual's replacement. This provision shall not apply if a medical or personal emergency requires a key personnel's individual release from the Project, or if the key personnel leaves the employment of the Consultant or its affiliates.

Price Proposals shall be submitted in a separate, sealed envelope marked “Confidential”. At a minimum, the Price Proposal shall include:

- Manpower labor estimate (work breakdown structure) by labor type/hours for the following major project phases, tasks, provided under *Scope of Services*. Include the corresponding hourly rates (an 11-inch by 17-inch format for the work breakdown structure is acceptable).
    - Phase 1: Project Management and Administration
        - Task 1.1: General Project Management
        - Task 1.2: Project Work Plan
        - Task 1.3: Project Invoicing and Reporting
        - Task 1.4: Project Workshops
        - Task 1.5: Project Meetings
        - Task 1.6: Project Management Review Meetings
    - Phase 2: Preliminary Design Phase Services
        - Task 2.1: Data Review and Evaluation
        - Task 2.2: Design Criteria
        - Task 2.3: Site Layout and Sustainability Evaluation
        - Task 2.4: Design Guidance Document
        - Task 2.5: Basis of Design Memorandum
- Clear identification of proposed Minority and Women Business Enterprise (MWBE) participation and proposed MWBE firms and scope of work. A MWBE goal of 4 to 8% has been set for this DP. Clearly identify any proposed Small Business Enterprise (SBE) participation and proposed SBE firms and scope of work. DW encourages engagement of SBEs, although no specific SBE goal has been set for the Project. More information on DW’s MWBE Program can be found online at: http://www.denverwater.org/DoingBusinesswithUs/SmallDisadvantagedBusinessEnterprisesSDBE
- Proposed additional scope items as add-on tasks with detailed description of tasks, benefits and WBS for the add-on(s).
- Proposed labor rate escalation for calendar years 2017 through 2019.

## Section 11: Addenda to the Request for Proposals

If it becomes necessary to revise any part of the RFP, an addendum will be placed online at: http://www.denverwater.org/DoingBusinesswithUs/RequestsforProposals/BidProposalsEngineering/ prior to **June 10, 2016**. Respondents are responsible to check online prior to submission of their proposal and acknowledge receipt of addendum(s) within their proposal.

## Section 12: Selection Criteria

DW will review the Proposals and make a selection based on best value while considering the following criteria.

| Criteria | Standard | Weighting Factor |
|---|---|---|
| Project Personnel and Firm Experience | • Do the assigned personnel have the demonstrated skills and experience to provide a detailed and complete design?<br>• Do personnel have firsthand experience performing this type of work in a collaborative, multi-disciplined, multi-firm team?<br>• Is the firm's capacity and commitment to providing the staff identified in the Project Organization Chart clearly demonstrated?<br>• Are key project staff identified and is their experience working on W/WWTP projects of similar size and complexity to the NSRWTP highlighted?<br>• Are proposed team members clearly tied to project references?<br>• Do key team members have Project Management Professional certification?<br>• Do the firm and the firm's proposed team members meet or exceed the minimum qualifications listed in Section 5?<br>• Does the firm's proposal demonstrate adequate resources and support services within the Denver metro region for key staff roles throughout all phases of the Project?<br>• Does the team composition reflect commitment to meeting or exceeding the MWBE participation goals for the NSRWTP Project? | 4 |
| Proposed Approach, Project Plan and Schedule | • Does the proposal show an understanding of DW's project objectives and the results that are desired from the project?<br>• Does the approach reflect the team's desire to serve as an active and engaged member of a multi-firm design team?<br>• Does the firm's proposed approach add value, innovation and efficiencies to the Project?<br>• Is the firm capable of completing the work in the required time frame and avoiding schedule impacts to other DP consultants?<br>• Does the proposed schedule demonstrate a complete understanding of DW's objectives and scope of work, as well as key hand-off points between DP consultants? | 4 |
| Cost and Work Hours | • Do the work hours presented accurately reflect the required level of effort, at the proper level of experience, to complete the project tasks?<br>• How do unit labor rates and escalation compare to other firms?<br>• What percentage of the proposed team is local and how do travel costs for out-of-town staff compare to other consultants'?<br>• Are key staff dedicated to the project at the level of commitment noted in the proposal?<br>• Is the WBS completed properly, detailed, and meet the project needs?<br>• Are subconsultant fees and expenses clearly identified? | 2 |

The scale of the criteria is from 1 to 10, with 1 being a poor rating, 5 being an average rating, and 10 being an outstanding rating. All criteria will be multiplied by the associated weight to give a weighted criteria score. The weighted criteria scores will be summed for a cumulative score. The maximum possible cumulative score is 100.

## Section 13: Proposal Submittal

Selection of a Consultant will be based on the selection criteria described above. The Proposal shall address all the selection criteria.

Costs associated with Proposal preparation, pre-proposal meeting attendance, interview attendance and so forth shall be borne entirely by the proposing Consultant. Proposal information becomes property of DW.

Firms are recommended to access and become familiar with a copy of the most recent version of DW's CPCS and CPPM CAD standards and specifications formatting at no cost to DW. Consultants will be responsible for meeting the requirements of DW's standards.

Eight hard copies and one electronic copy (pdf on a CD or flash drive) of the Consultant's Proposal and Price Proposal shall be submitted to Peter McCormick, Design Project Manager, by 11:00 a.m., local time, on Thursday, June 16, 2016 at Denver Water, 1600 West 12th Avenue, Denver, Colorado 80204. Proposers acknowledge that DW may be required to disclose some or all of the documents submitted with a Response, pursuant to the Colorado Open Records Act, C.R.S. 24 72-200.1, et seq. Under C.R.S. 24-72-204(3) (a) (IV), DW may deny inspection of any confidential commercial or financial information furnished to DW by an outside party. Therefore, a Proposer shall clearly designate any documents submitted with its Response that it deems proprietary or confidential, to aid DW in determining what must be disclosed in the event of a request for documents under the Colorado Open Records Act.

## Section 14: Attachments

The following documents have been posted to DW's website for reference:

- Draft Professional Services Agreement
- Sample Work Breakdown Structure